Selected Abstracts from the November Issue of the European Journal of Vascular and Endovascular Surgery

Piergiorgio Cao, MD, FRCS, Editor-in-Chief, and Jean-Baptiste Ricco, MD, PhD, Senior Editor

Extracranial Blood Flow Distribution During Carotid Surgery

Aleksic M., Brunkwall J. Eur J Vasc Endovasc Surg 2009;38:552-5.

Objective: The collateral function of the external carotid artery (ECA) for cerebral perfusion in cases of atherosclerotic occlusive disease of the internal carotid artery (ICA) is difficult to assess; for this reason, blood flow measurements were taken during carotid endarterectomy (CEA).

Methods: Blood flow was measured before and after CEA using a transit-time flow meter at the carotid artery in 1000 patients who underwent CEA for high-degree (>70%) ICA stenosis. The data were collected prospectively and analysed retrospectively.

Results: Median ICA blood flow increased significantly, up 46% from 160 ml min^{-1} (IQR: 100–234 ml min^{-1}) before CEA to 240 ml min^{-1} (IQR: 187–309 ml min^{1}) after CEA ($P < 0.001$). Median ECA blood flow dropped by 4%, from 152 ml min^{-1} (IQR: 108–220 ml min^{-1}) to 150 ml min^{-1} (IQR: 103–200 ml min^{-1}) ($P = 0.001$). Relative ICA blood flow volumes related to common carotid artery (CCA) flow increased from 58% before CEA to 73% after CEA, whereas relative ECA flow decreased from 54% to 44%.

Conclusions: Increased blood flow in the ICA after CEA is accompanied by decreased ECA flow whereupon the absolute amount of this redistribution is relatively limited. A more profound evaluation of these haemodynamic conditions demands further study.

Thoracic Outlet Syndrome in Children and Young Adults

Maru S., Dosluoglu H., Dryjski M., Cherr G., Curl G.R., Harris L.M. Eur J Vasc Endovasc Surg 2009;38:560-4.

Objectives: Thoracic outlet syndrome has been well described in the population between 25 and 40 years of age, and is less frequently reported in those in the first two decades of life. The objective of this study was to review results with onset of TOS in the first two decades of life to determine type of presentation and outcomes from surgical intervention.

Methods and materials: Charts of all patients in the first two decades of life, operated on for TOS between 1994 and 2006 were reviewed with follow-up by clinic visit and phone survey to assess the patients' current level of activity and relief from symptoms.

Results: Twelve patients were identified (13 operations), with a mean age of 16.8 years. Acute ischemic symptoms were the initial presentation for 38%, venous TOS in 24%, and neurogenic symptoms in 38%. All patients had symptom relief with surgery with a mean time to resolution of 10.9 weeks. All patients remained symptom free or improved at follow-up.

Conclusions: Vascular TOS is much more common in TOS presenting in the first two decades of life. Surgical intervention for TOS in this population results in long-lasting symptom relief and should be considered for all subtypes of patients.

Advances in Imaging of the Spinal Cord Vascular Supply and its Relationship with Paraplegia after Aortic Interventions. A Review

Melissano G., Chiesa R. Eur J Vasc Endovasc Surg 2009;38:567-77.

Introduction: Preoperative knowledge of the spinal cord (SC) vasculature could be useful for stratifying and decreasing the risk of perioperative paraplegia after thoracic and thoraco-abdominal aortic surgery. Recent advances in magnetic resonance (MR) and computed tomography (CT) angiography and post-processing techniques have improved this knowledge.

Methods: A search of MEDLINE/Pubmed and SCOPUS databases identified 1414 pertinent abstracts; 123 full-length manuscripts were screened to identify relevant studies with acceptable design and patient numbers. Forty-three were selected.

Results: SC circulation was studied in 1196 patients to detect the great radicular artery: 522 by MR-angiography and 674 by CT angiography. Detection rates were 67–100% (mean 80.8%) with MR-angiography being 18–100% (mean 72%) with CT angiography. The side and level of the great radicular artery were consistent between the methods. Several authors tried to use the imaging results to guide clinical management.

Conclusions: Non-invasive imaging of the SC blood supply allows preoperative definition of the vasculature in many, but not all, cases. The impact of these findings on clinical management is potentially beneficial but still uncertain. Further improvements in image acquisition and post-processing techniques are needed. Future studies need to be large enough to compensate for inter-individual variability in SC vasculature in health and disease; however, even a partial reduction of paraplegia rate offers a formidable motivation for further research in this area.

The Visceral Hybrid Repair of Thoraco-abdominal Aortic Aneurysms – A Collaborative Approach

Drinkwater S.L., Böckler D., Eckstein H., Cheshire N.J.W., Kotelis D., Wolf O., Hamady M.S., Geisbüsch P., Clark M., Allenberg J.R., Wolfe J.H., Gibbs R.G., Jenkins M.P. Eur J Vasc Endovasc Surg 2009;38:578-85.

Objective: To report the collaborative data of 3 major European Vascular Units using the 'visceral hybrid' procedure for thoraco-abdominal aortic aneurysms and dissections.

Methods: A consecutive series of 107 urgent and elective high-risk patients were included in a prospectively collected database.

Results: All stents involved the entire thoracic and abdominal aorta with left subclavian coverage in 19 and revascularisation in 12. The distal landing zone was in the infra-renal aorta in 75% and in the iliac artery in 25%. The 30-day mortality rate was 16/107 (14.95%). 13/107 (12.1%) of the patients suffered spinal cord ischaemia which was complete and permanent in 9/12 (8.4%). 4 patients (3.7%) required long term dialysis and a segment of gut infarction requiring resection occurred in 3 (2.8%). Most patients had visceral bypass grafting and aortic stent-grafting performed in one stage. In 18 patients the stenting was performed later. Three of these patients ruptured before the stenting procedure was undertaken.

Conclusion: These early results of visceral hybrid repair for high-risk patients with complex thoraco-abdominal aortic aneurysms are encouraging, in a group of patients in whom fenestrated/branched stent-grafting is not an option and open surgery hazardous.

A Clampless and Sutureless Aorto-Prosthetic End-to-Side Anastomotic Device: An Experimental Study

Alimi Y.S., Saint Lebes B., Garitey V., Afrapoli A., Boufi M., Hartung O., Garcia S., Mouret F., Berdah S. Eur J Vasc Endovasc Surg 2009;38:597-602.

Objectives: A feasibility study.

Methods: Eight pigs (all females; mean weight: 29 kg) underwent a conventional transperitoneal aortic approach with implantation of an aorto-prosthetic end-to-side anastomosis using a Clampless® device and deployment of a 5-mm polytetrafluoroethylene (PTFE) graft. After proximal ligature, a conventional end-to-end anastomosis was then performed between the graft and the left iliac artery.

Results: The first pig died during the procedure due to graft misplacement. The seven other procedures were successful with a mean operative and anastomosis time of 101 min (range: 81–115 min) and 3.35 min (range: 2.25–4.25 min), respectively; mean blood loss was 152 ml (range: 30–235 ml). Another pig with a patent graft died at day 4 as a result of a severe unrelated pneumonopathy. The angiogram performed during the procedure and before sacrifice, at 2 ($n = 2$), 4 ($n = 2$) and 6 weeks ($n = 2$), showed no graft stenosis or thrombosis. Microscopic examination revealed a tissue covering the intraluminal stent, which evolved over time, with no visible endothelial proliferation or inflammation.

Conclusion: An aorto-prosthetic anastomosis can be performed safely and efficiently with our new clampless and sutureless device. The next step will be a laparoscopic Clampless® implantation.

Hybrid Endovascular and Open Treatment of Severe Multilevel Lower Extremity Arterial Disease

Antoniou G.A., Sfyroeras G.S., Karathanos C., Achouhan H., Koutsias S., Vretzakis G., Giannoukas A.D. Eur J Vasc Endovasc Surg 2009;38:616-22.

Objective: To evaluate the feasibility and efficacy of simultaneous combined endovascular and open lower extremity arterial reconstruction.

Design: Case series study with retrospective analysis of prospectively collected non-randomised data.

Methods: Patients were divided into three groups: group 1 and group 2 included patients who underwent endovascular reconstruction proximal and distal to the site of open reconstruction, respectively, whereas group 3 included patients who underwent open surgery with both proximal and distal endoluminal procedures. Patency analyses were performed using